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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|--|-------------|----------------------|-----------------------|------------------|
| 10/679,422 | 10/07/2003 | Michio Masuda | TOC-0009 | 3477 |
| 23353 | 7590 | 05/27/2005 | EXAMINER | |
| RADER FISHMAN & GRAUER PLLC LION BUILDING 1233 20TH STREET N.W., SUITE 501 WASHINGTON, DC 20036 | | | SHARP, JEFFREY ANDREW | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 3677 | |

DATE MAILED: 05/27/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|------------------------------|------------------------|---------------------|--|
| Office Action Summary | Application No. | Applicant(s) | |
| | 10/679,422 | MASUDA, MICHIO | |
| | Examiner | Art Unit | |
| | Jeffrey Sharp | 3677 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
 - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
 - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
 - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 13 April 2005.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-5 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 1-5 is/are rejected.
- 7) Claim(s) _____ is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 02 March 2004 is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) Notice of Informal Patent Application (PTO-152)
- 6) Other: _____.



DETAILED ACTION

This action is responsive to Applicant's remarks/amendment filed on 13 April 2005 with regard to the Official Office action mailed on 22 December 2004.

Status of Claims

- [1] Claims 1-5 are pending.

Specification

- [2] Applicant's amendments to the specification and abstract have been entered. It appears there is support for these amendments, and that no new matter has been added.

Claim Objections

- [3] Claim(s) 2, 4, and 5 were previously objected to because of informalities. Applicant has successfully addressed these issues in the amendment filed on 13 April 2005. Accordingly, the objection(s) to claim(s) 2, 4, and 5 have been withdrawn.

Claim Rejections - 35 USC § 103

- [4] The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

[5] Claims 1, 2, and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Seddon US-964,069 in view of either Kobusch US-6,146,073 or Sundh US-1,830,918.

Seddon teaches an insert having a rhombic cross-section that is attached at one end to a nut. See Seddon claim 1. The insert is integral with the nut at one end generally to 1) prevent loss of the insert, 2) prevent rotation of the insert, 3) enable the coil insert to expand upon insertion threading of the male screw, and to 4) enable a constricting/locking effect during the attempt of removal of the nut, or upon loosening effects of vibration.

However, Seddon fails to disclose expressly **at least one coil to be of smaller diameter** than the male screw at the side where the male screw enters the female screw.

Kobush teaches at least one coil smaller in diameter than the male screw (Col 1 lines 32-34) for facilitating the insertion of the insert into the threaded bore. (See also, Caminez US-2,152,681). A male screw could be inserted into the nut from either direction, including towards the reduced diameter portion of the insert.

Sundh teaches at least one coil of smaller diameter than the male screw in order to obtain a contractile locking force against the threads of the male screw. See Sundh page 1 lines 83-89, page 2 lines 29-37, page 3 lines 6-11, and page 3 lines 69-73.

At the time of invention, it would have been obvious to one of ordinary skill in the art to modify the insert taught by Seddon, to comprise a reduced diameter coil portion facing the male screw as suggested by either Kobush or Sundh, in order to 1) provide an advantageous lead-in for making the insert easier to install into the nut as demonstrated by Kobush, and/or 2) to provide greater locking contractile (i.e., '*constricting*') forces on the male screw threads as it is received by the nut, while still enabling the coil to expand into the threaded bore of the female

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screw. See also, US-3,023,796 to Penten, which shows coils of an insert decreasing in diameter on which could be the side of entry of a male screw.

As for claim 2, the component is a nut.

As for claim 5, Kobush discloses in Col 1 lines 15-21, that prior art helicoil inserts are designed to be oversized, so as to be frictionally held within a threaded female bore.

[6] Claim 3 rejected under 35 U.S.C. 103(a) as being unpatentable over Seddon v. Kobusch or Seddon v. Sundh as discussed above, in even further view of Marshall 422,027.

Seddon v. Kobusch and Seddon v. Sundh teach all of the limitations of the instant claims 1 and 2, including attaching one end of the insert to an end of the nut.

However, Seddon v. Kobusch and Seddon v. Sundh fail to disclose expressly the means for fixing the insert at one end of the nut, as an **end inserted into a depression in the nut**.

Marshall teaches means for fixing the insert at one end of the nut, as an end inserted into a depression in the nut.

At the time of invention, it would have been an obvious matter of design choice to one of ordinary skill in the art, to modify the means for fixing the insert taught by both Seddon v. Kobusch or Seddon v. Sundh, to be of a '*peg-in-hole*'-type as suggested by Marshall, as an alternate and equivalent means to 1) prevent separation of the two parts, and/or 2) prevent relative rotation between the two. See Marshall, page 1 lines 46-51. See, also US-1,724,460 to Day which also shows '*peg in hole*' means for securing an insert against rotation.

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[7] Claims 4 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Seddon v. Kobusch or Seddon v. Sundh as discussed above, in even further view of Unsworth et al. US-2001/0053317.

Seddon v. Kobusch and Seddon v. Sundh teach all of the limitations of the instant claims 1 and 2, including attaching one end of the insert to an end of the nut.

However, Seddon v. Kobusch and Seddon v. Sundh fail to disclose expressly the use of adhesive or welding to join the insert and the nut.

Unsworth et al. teach that the use of welding, adhesives, and pressure fits at one or more points between an insert and a nut is well known in the prior art. See Unsworth et al., paragraph [0029].

At the time of invention, it would have been an obvious matter of design choice to one of ordinary skill in the art, to modify the means for fixing the insert taught by both Seddon v. Kobusch or Seddon v. Sundh, to comprise adhesives, welding, or friction fits as equivalent means for securing the insert against rotation within the threaded bore of the nut.

Response to Arguments/Remarks

[8] The examiner acknowledges Applicant's statement that Seddon US-964,062 fails to suggest a heli-coil (e.g., "coiled wire having a rhombic cross-section") having a diameter smaller than a male screw on an insertion side (i.e., an end portion of the coiled wire toward an inserted male screw which has a diameter smaller than said male screw).

First, Applicant does not positively claim a male screw, and thus any arguments¹

¹ such as that shown in Applicant's remarks, page 4, third paragraph.

directed towards the prior art of record not teaching "at least one coil to be of smaller diameter than the male screw *at the side where the male screw enters the female screw*" is considered moot. Note that it has been held that a recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus satisfying the claimed structural limitations. *Ex parte Masham*, 2 USPQ2d 1647 (1987). In the instant case, the intentions of the coiled wire interacting with an inserted male screw is considered an intended use, absent a more positive combination recitation.

With regard to Applicant's remarks that Kobusch would not allow a male screw to be inserted from "bottom upward," because "the male screw will be prevented by the tang (19),"² tang (19) can be permanently severed from the coil via a notch (20). It is known that these tangs (19) are meant to provide a temporary means to facilitate insertion of the coil. They can easily be broken due to the weakened cross section portion at the notch (20)³. Further note that tang (19) could readily be replaced with means (21),⁴ which would permit insertion of a male screw without a need for a tang (19). Kobusch clearly suggests an "insert formed by coiling a wire having a rhombic cross-section...[having a] diameter of at least one turn at one end of the insert...smaller than the diameter of [a] male screw."

With regard to Applicant's assertion that Sundh teaches: "whenever the nut is subjected to external forces tending to displace it, a spring holds the nut normally against movement on the bolt to which it is applied and to *engage the bolt with an added clamping force*"⁵, it appears the newly added recitation to claim 1 "so as to adhere to the male screw and generate a loosening

² remarks, page 4, last line of fourth paragraph.

³ as evidenced by "desired break point", col. 3 line 31 of Kobush.

⁴ Kobusch element 21.

⁵ remarks, page 4, paragraph 5.

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"prevention force" provides this same limitation. Note Sundh equates a "coiled wire" to a "spring (c)" and a screw as a "bolt (a)". Sundh also equates a "clamping force" to Applicant's "frictional force"⁶. The threads of Sundh's screw (a) engage the coiled wire (c) at a portion of said coiled wire having a turn of smaller diameter (near c1, c2), so as to provide a constricting locking effect therewith. This constricting effect occurs when the smaller diameter portion of the coiled wire enlarges upon entry of the larger male screw, so as to match the larger male screw diameter. A point is reached where the small diameter turn eventually matches the internal thread of the female screw mechanism, thus allowing the screw to continue threading through said female screw mechanism with increase frictional resistance.

It is to be further noted that the term "the diameter" is not specified as being an inner or outer diameter. Consequently, in its broadest sense, Seddon anticipates the "smaller diameter turn at one end" limitation, because one end of the insert has an "outer diameter" greater than another end having an "inner diameter" less than said "outer diameter". Again, a screw is not positively claimed, and therefore any screw having a thread diameter between said inner and outer diameters would read on claim 1.

Applicant has not presented specific remarks/arguments as to the teachings of Marshall US-422,027 and Unsworth et al. US-2001/0053317 relied on for the rejection of claims 3, 4, and 5.

Conclusion

[9] **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

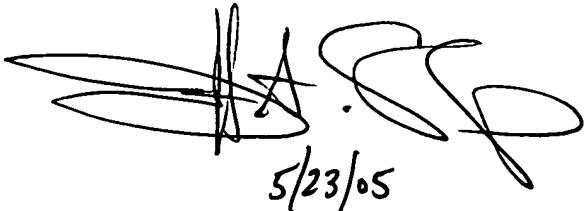
⁶ remarks, page 5, line 15.

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

[10] Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeffrey Sharp whose telephone number is (571) 272-7074. The examiner can normally be reached 7:00 am - 5:30 pm Mon-Thurs.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, J.J. Swann can be reached on (571) 272-7075. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



5/23/05



ROBERT J. SANDY
PRIMARY EXAMINER